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09/972,163	10/04/2001	Donald F. Albert	AAC-1 CIP	5897

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EXAMINER

VO, HAI

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/972,163

Applicant(s)

ALBERT ET AL.

Examiner

Hai Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-139 is/are pending in the application.
- 4a) Of the above claim(s) 39,52,54-83,86-89,113,127 and 129-139 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38,40-51,53,84,85,90-112,114-126 and 128 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0128.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-38, 40-51, 53, 84, 85, 90-112, 114-126, and 128 in the reply to restriction requirement received on 06/13/2003 is acknowledged.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

***Claim Rejections - 35 USC § 103***

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1-24, 40-41, 45-51, 84, 85, 90-101, 115-116, 120-126 are rejected under 35 U.S.C. 102(a) or 102 (e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hrubesh et al (US 6,005,012). Hrubesh teaches an organic, monolithic aerogel having dimensions of 1.5x2.5x4 cubic centimeters and the aerogel is substantially free of crack (example 4, column 1, line 29). The monolithic aerogel is prepared using a non-critical drying process (example 4) and has a density of from 20 to 300 kg/m<sup>3</sup> (column 4, line 2), a surface area at least of 200 m<sup>2</sup>/g (column 3, line 58) and a porosity from 85% to 90% (column 4, lines 2-4). Since the claim does not exclude an organic monolithic aerogel that has a surface area of 200 m<sup>2</sup>/g, the surface area value disclosed by Hrubesh is within Applicants' claimed range. The organic aerogel is dried in less than 24 hours (example 4). The organic aerogel has the average pore size less than 5000 angstroms or 0.05 micron (column 3, line 54). Likewise, it is clearly apparent that the organic aerogel has a pore area less than 0.2 sq. micron. Hrubesh teaches a small pore area formed from a mixture of phenolic-novolak resin dissolved in furfural and the mixture further dissolved in a propanol (column 3, lines 38-40). Hrubesh teaches that the organic aerogel can be further carbonized (column 3, lines 42-43).

Hrubesh does not specifically disclose that the organic, monolithic aerogel does not shrink substantially. However, it appears that Hrubesh's organic aerogel meets all the physical properties recited by the claims, pore size, density, porosity, pore area, surface area and dimensions within the claimed ranges. Further, the shrinkage of the organic aerogel is also dependent on chemistry of the materials

from which it is formed as well and Hrubesh's organic aerogel is made of the same materials as Applicants' aerogel (phenolic-novolak resin dissolved in furfural).

Therefore, it is not seen that Hrubesh's organic aerogel have been performed differently from Applicants' aerogel. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990). Products of identical chemical composition can not have mutually exclusive properties.

Hrubesh does not specifically disclose that the organic, monolithic aerogel is formed in situ. It is the examiner's position that the organic aerogel of Hrubesh is identical to or only slightly different than the claimed article prepared by the method of the claim, because both articles are formed from the same materials, having all the physical properties required by the claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious differences between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289,291 (Fed. Cir. 1983). The Hrubesh reference anticipates the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted Declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are

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commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Hrubesh. It is the examiner's position that Hrubesh anticipates or strongly suggests the claimed subject matter.

4. Claim 37 is rejected under 35 U.S.C. 102(b) as being anticipated by Ramamurthi et al (US 5,306,555). Ramamurthi discloses a silica gel having a surface area less than 200 m<sup>2</sup>/g comprising acetic acid (table 1A, example 7B). It is the examiner's position that Ramamurthi anticipates the claimed subject matter.
5. Claims 40-41, 45-51, 115-116, 120-126 are rejected under 35 U.S.C. 102(b) as being anticipated by Pekala (US 5,744,510). Pekala discloses a small pore area formed from a mixture of phenolic-novolac resin dissolved in furfural and the mixture further dissolved in a propanol. The small pore area is prepared during a sol-gel polymerization process (abstract). The low density microcellular material having a pore size of 0.01 microns is in form of a complex prepared during a sol-gel polymerization process (abstract). It is the examiner's position that Pekala anticipates the claimed subject matter.
6. Claims 3, 5, 6-11, 13, 14, 16, 17, 19, 20-23, 40-41, 45-47, 49, 51, 53, 84, 85, 90, 91, 93, 95-99, 114-116, 120-122, 124, 126 and 128 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tennent et al (US 6,099,965). Tennent disclose an organic monolithic aerogel prepared using a non-critical drying process, having a density of 150 kg/m<sup>3</sup> and a porosity of 93% wherein the aerogel is substantially free of cracks (example 8, column 15, lines 30-40). The aerogel is produced in a method that uses a surfactant

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(column 12, lines 40-45). The aerogel shinks about 10-15% by volume (example 8). The aeogel has an average pore size less than 2 nm (figure 2, column 23, line 56). Likewise, the average pore area is less than 3.14 sq. nm. The aerogel is formed from a mixture of phenol, formaldehyde by a sol-gel polymerization (example 8). Tennent does not specifically disclose that the organic, monolithic aerogel is formed in situ. It is the examiner's position that the organic aerogel of Tennent is identical to or only slightly different than the claimed article prepared by the method of the claim, because both articles are formed from the same materials, having all the physical properties required by the claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious differences between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289,291 (Fed. Cir. 1983). The Tennent reference anticipates the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted Declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in

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scope with Tennent. It is the examiner's position that Tennent anticipates or strongly suggests the claimed subject matter.

7. Claims 6, 14, 16, 19, 20-24, 53, 90, 91, 93, 95-100 and 128 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rilling et al (US 5,627,217). Rilling teaches an organic foam having a monolithic form, a density of 100 kg/m<sup>3</sup> and a porosity of 80.2% (column 5, lines 23, 50-55, column 3, line 53, column 18, line 32). The organic foam is prepared using a non-critical drying process and formed in less than 24 hours (example 1). The organic foam is produced in a method that uses a surfactant (column 13, line 65). Rilling does not specifically disclose that the organic, monolithic foam is formed in situ. It is the examiner's position that the organic foam of Rilling is identical to or only slightly different than the claimed article prepared by the method of the claim, because both articles are formed from the same materials, having all the physical properties required by the claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious differences between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289,291 (Fed. Cir. 1983). The Rilling reference anticipates the claimed



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subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted Declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Rilling. It is the examiner's position that Rilling anticipates or strongly suggests the claimed subject matter.

8. Claims 16, 18, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Meyer, IV et al (US 5,642,776). Meyer, IV discloses an organic foam formed in situ in less than about 24 hours and having a monolithic form 8.5in x5.75in x1/16 in (column 4, lines 20-25). Meyer, IV discloses an organic foam being prepared using a non-critical drying process (column 3, lines 10-15). It is the examiner's position that Meyer, IV anticipates the claimed subject matter.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 25-36 and 101-112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Pekala (US 5,744,510). Hrubesh does not specifically disclose the thermal conductivity of the organic monolithic aerogel. Therefore, it is necessary and thus obvious for the skilled artisan

to look to the prior art for the suitable thermal conductivity of the organic aerogel. Pekala teaches the organic aerogel having a thermal conductivity from 0.0045 to 0.0065 W/m-k after evacuation (column 5, line 34, figure 3) meeting the specific range required by the claims. In an absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the organic aerogel having a thermal conductivity instantly claimed, motivated by Pekala and expectation of successfully practicing the invention of Hrubesh. Such a low thermal conductivity is also taught by the prior art to make the aerogel suitable for use as an electrode, which is important to the invention of Hrubesh, thus further suggesting the modification.

11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Parkinson (US 5,190,987). Hrubesh discloses the use of an organic solvent in the preparation of the organic aerogel (column 3, lines 40-41). Hrubesh does not specifically disclose the use of acetic acid as a solvent. Parkinson, however, discloses the production of the organic aerogel being treated with acetic acid (column 2, lines 35-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ acetic acid as a solvent of the sol-gel polymerization process motivated by the desire to increase the degree of crosslinking and thus stabilize the network.
12. Claims 42-44, 117-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pekala (US 5,744,510) in view of Parkinson (US 5,190,987). Pekala does not specifically disclose the low density microcellular material comprising an acetic acid.

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Parkinson, however, discloses the production of the organic aerogel being treated with acetic acid (column 2, lines 35-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ acetic acid as a solvent of the sol-gel polymerization process motivated by the desire to increase the degree of crosslinking and thus stabilize the network.

13. Claims 42-44, 117-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tennent et al (US 6,099,965) in view of Parkinson (US 5,190,987). Tennent does not specifically disclose the low density microcellular material comprising an acetic acid. Parkinson, however, discloses the production of the organic aerogel being treated with acetic acid (column 2, lines 35-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ acetic acid as a solvent of the sol-gel polymerization process motivated by the desire to increase the degree of crosslinking and thus stabilize the network.

### ***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (703) 605-4426. The examiner can normally be reached on Tue-Fri, 8:30-6:00 and on alternating Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (703) 308-2414. The fax phone numbers for the organization where this application or proceeding is assigned

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are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

HV  
August 20, 2003



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